Paper No. 14

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

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<u>Ex parte</u> NORBERT CONRADS, MARTIN WEIBRECHT, ULRICH SCHIEBEL and
HERFRIED K. WIECZOREK

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Appeal No. 2003-2103
Application No. 09/826,256

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ON BRIEF

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Before FRANKFORT, JERRY SMITH and BAHR, <u>Administrative Patent Judges</u>.

BAHR, <u>Administrative Patent Judge</u>.

DECISION ON APPEAL

This is a decision on appeal from the examiner's final rejection of claims 1, 2 and

4-8, which are all of the claims pending in this application.

We AFFIRM.

BACKGROUND

The appellants' invention relates to an x-ray examination apparatus comprising a

correction unit which takes into account delayed emission of charges from a previous

image. As explained on page 1 of appellants' specification, incident x-rays release electric charge carriers in the x-ray image sensor matrix and these electric charges are detected. Some of the charge carriers can be trapped in a trap-state, be retained in such a trap-state, and escape from the trap-state at a later time such that they are detected as electric charges with a delay. If the initial image signal were applied to a monitor without correction, not only the image information from the instantaneous image but also image information of a previously picked-up image would be reproduced. As a result, after-images would be displayed together with the instantaneous image.

The correction unit of appellants' invention includes a memory for storing correction values and an arithmetic unit for computing signal levels of the corrected image signals from signal levels of the initial image and at least some of the correction values. The correction values are obtained from a separate calibration of the x-ray examination apparatus. This calibration is carried out by applying a pre-selected number of x-ray pulses with a pre-selected pulse-width, pulse-rate and x-ray dose per pulse. Subsequent to the calibration x-ray exposure, the charge carriers in respective sensor elements of the x-ray sensor matrix are detected. The period of time lapsed between the calibration exposure and the generation of the calibration signal image signal is recorded or controlled. The calibration image signal represents the electric charges emitted during read-out after said period of time since the predetermined

calibration exposure. Sets of correction values are stored for separate values of the

number of preceding x-ray pulses, pulse rate, and relative intensities, with each set

including correction values for several values of the time lapsed since the most recent

x-ray pulse.   The selection unit of appellants' correction unit selects correction values

which pertain to an x-ray exposure which has preceded the formation of the x-ray image

on the basis of a reference image signal, which is generated when no x-rays are

incident on the x-ray sensor matrix.

The examiner relied upon the following prior art references in rejecting the

appealed claims:

| Bruijns et al. (Bruijns) | 5,974,113 | Oct. 26, 1999 |
| Conrads et al. (Conrads) | 6,246,746 | Jun. 12, 2001 |

The following rejections are before us for review.

Claims 1, 2 and 4-8 stand rejected under the judicially created doctrine of

obviousness-type double patenting as being unpatentable over claims 1-3 of U.S. Pat.

No. 6,246,746.

Claims 1, 2 and 4-8 stand rejected under 35 U.S.C. § 103 as being unpatentable

over Bruijns.

Rather than reiterate the conflicting viewpoints advanced by the examiner and

the appellants regarding the above-noted rejections, we make reference to the final

rejection and answer (Paper Nos. 4 and 9) for the examiner's complete reasoning in

support of the rejections and to the brief (Paper No. 8) for the appellants' arguments

thereagainst.

OPINION

In reaching our decision in this appeal, we have given careful consideration to

the appellants' specification and claims, to the applied Bruijns patent, and to the

respective positions articulated by the appellants and the examiner. As a consequence

of our review, we make the determinations which follow.

Appellant's brief does not present any arguments against the rejection of claims

1, 2 and 4-8 under the judicially created doctrine of obviousness-type double patenting.[1]

The rejection is thus summarily sustained.

We turn our attention next to the examiner's rejection of claims 1, 2 and 4-8 as

being unpatentable over Bruijns. Appellants' brief states on page 6 that claims 1, 2 and

4-8 are grouped together for purposes of this appeal. Thus, in accordance with 37 CFR

§ 1.192(c)(7), we have selected claim 1 as the representative claim in deciding this

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[1] While we acknowledge that appellants indicated on page 14 of Paper No. 3 an intent to file a
terminal disclaimer upon the indication of allowable subject matter if the obviousness-type double
patenting rejection were maintained, we note that no terminal disclaimer has been filed.

appeal, with claims 2 and 4-8 standing or falling therewith. See In re Young, 927 F.2d

588, 590, 18 USPQ2d 1089, 1091 (Fed. Cir. 1991); In re Wood, 582 F.2d 638, 642, 199

USPQ 137, 140 (CCPA 1978). Representative claim 1 reads as follows:

> 1. An x-ray examination apparatus comprising
>   an x-ray image sensor matrix for deriving an initial
> image signal[2] from a predetermined calibrated x-ray
> exposure, and an initial image signal from an x-ray image,
> and
>   a correction unit for deriving a corrected image signal
> from the initial image signal, wherein the correction unit
> includes a memory for storing correction values derived from
> the calibration image signal and an arithmetic unit for
> computing signal levels of the corrected image signal from
> signal levels of the initial image signal and at least some of
> said correction values in order to take delayed charges into
> consideration during correction.

The objective of the Bruijns apparatus is to address the drawback of

conventional image pick-up apparatus that, even when the optical image has a uniform

brightness, image lines from different image sensors may have different brightness

values in the composite image because differences occur between signal levels of sub-

image signals even though they relate to brightness values from substantially the same

positions on the exit window. According to Bruijns, these differences may be due inter

alia to the fact that individual image sensors receive light from the exit window via

different optical paths or to different sensitivities of the individual brightness sensors.

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[2] This occurrence of "initial image signal" should apparently be "calibration image signal" and we
have treated it as such in interpreting claim 1.

Bruijns discloses an image pick-up apparatus 1 for picking up on image sensors 2, 3 a

plurality of sub-images S_1 and S_2 split from a single image by a beam splitter 38 and

combining them so as to form a single composite image, the pick-up apparatus

including a correction unit 5 for correcting brightness values of the composite image by

selecting bright and dark parts from the sub-images and deriving a gain correction

factor from the bright parts and an offset correction term from the dark parts. Image

lines from one image sensor constitute the odd image lines in the composite image and

image lines from the other sensor constitute the even image lines in the composite

image. The bright parts of the sub-images are those parts whose brightness values

exceed a threshold value and the dark parts are those parts whose brightness values

fall below a ceiling value. In essence, the gain correction factor is obtained from a ratio

of the brightness values of the bright parts of the two sub-images and the offset

correction term is obtained from the difference between the brightness values of the

dark parts of the sub-images. The correction unit comprises an adder unit for adding

the offset correction factor to a signal level of one of the sub-image signals and a

multiplier unit for multiplying a signal level of said sub-image signal by the gain

correction factor.

Despite the examiner's repeated reference (final rejection, page 2; answer,

pages 3 and 4) to Bruijns' disclosure in column 7, lines 42-52, of using stored values of

the gain correction factor and/or offset correction term from a previously picked up

image if the correction unit cannot derive a gain correction factor and/or offset

correction term from the electronic sub-image signals, for example because images

without dark or bright spots are presented, the crux of appellants' argument is that

Bruijns does not correct the initial image signal based on correction values obtained

from an earlier x-ray exposure or calibration process and thus cannot correct for the

delayed emission of electric charges trapped in the matrix from the earlier x-ray

exposure. The examiner concedes that Bruijns does not perform corrections for the

purpose of taking delayed charges into consideration, but states that, nonetheless,

"Bruijns' procedure would inherently correct from delayed charges since they would be

indistinguishable from dark current which Bruijns *does* correct for" (answer, page 5) and

appellants have not disputed this statement.

Given Bruijns' disclosure of the use of stored values of gain correction factors

and offset correction terms obtained from a previously picked up image, Bruijns

certainly discloses an image sensor matrix for deriving an initial image (calibration)

signal from a predetermined calibrated x-ray exposure (the previously picked-up image)

and an initial image signal (the later picked-up image for which gain correction and/or

offset correction factors cannot be derived) and a correction unit for deriving a corrected

image signal from the later picked-up image signal including a memory unit 41 for

storing correction values derived from the previously picked-up image signal and

arithmetic unit (adder and multiplier) for computing signal levels of the corrected image

signal from signal levels of the later picked-up image signal and at least some of the

correction values. As to the issue of whether Bruijns' apparatus is capable of taking

into consideration delayed charges during correction so as to meet the intended use

language of claim 1,[3] the examiner was justified in concluding that the application of the

offset correction term from a previously picked-up image which does not deviate

excessively from the instantaneous image, as disclosed by Bruijns in column 7, lines

42-52, would inherently correct for delayed charges, at least to some degree,[4] since the

differences between the dark parts would be indistinguishable from delayed charges so

as to shift the burden to appellants to show that Bruijns' apparatus is not inherently so

capable. Id., 128 F.3d at 1478, 44 USPQ2d at 1432. Appellants have not come forth

with any such evidence and, in fact, as mentioned above, have not even challenged the

examiner's conclusion.

In light of the above, appellants' brief has failed to persuade us that the examiner

committed error in concluding that the subject matter of appellants' claim 1 is

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[3] It is well settled that the recitation of an intended use for an old product does not make a claim to that old product patentable. In re Schreiber, 128 F.3d 1473, 1477, 44 USPQ2d 1429, 1431 (Fed. Cir. 1997).

[4] We note that claim 1 does not specify the manner or extent to which delayed charges are taken into consideration.

unpatentable over Bruijns. We thus sustain the rejection of claim 1, as well as claims 2

and 4-8 which fall therewith, as being unpatentable over Bruijns.

CONCLUSION

To summarize, the decision of the examiner to reject claims 1, 2 and 4-8 under

the judicially created doctrine of obviousness-type double patenting and under 35

U.S.C. § 103 as being unpatentable over Bruijns is affirmed.

No time period for taking any subsequent action in connection with this appeal

may be extended under 37 CFR § 1.136(a).

<u>AFFIRMED</u>

CHARLES E. FRANKFORT   )
Administrative Patent Judge   )
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) BOARD OF PATENT
JERRY SMITH   )   APPEALS
Administrative Patent Judge   )   AND
) INTERFERENCES
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